

SECTION 08341

SOUND CONTROL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Sound control doors and frames, including fire-rated, prime painted steel sound retardant door assemblies, rated STC 40 or above, complete, as indicated and specified.
- B. Provide sound retardant fixed windows where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- C. Specific acoustical ratings shall be as scheduled and shown on the architectural Drawings.
- D. Provide all steel acoustical doors, door frames, fixed windows, steel cam-lift hinges, neoprene and/or magnetic head and jamb gasketing, door bottoms, threshold, astragals and accessories, as required, to achieve the indicated sound retardant rating. All components shall be the products of one manufacturer. See Section 08710 "Door Hardware" for specified hardware.
- E. Thresholds and fasteners: Provide where indicated or required to attain the specified acoustical rating.
- F. Related Work Specified In Other Sections
 - 1. Unit Masonry – Division 4.
 - 2. Door Hardware - Division 8.
 - 3. Glazing - Division 8.
 - 4. Painting - Division 8.
 - 5. Gypsum Board Assemblies – Division 9.

1.2 PERFORMANCE REQUIREMENTS

- A. Requirements Of Regulatory Agencies
 - 1. Acoustical doors shall bear manufacturer's label designating sound-rated construction and indicating the acoustical rating of the door assembly.
- B. Reference Standards
 - 1. ASTM E90-81 (or later) - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
 - 2. ASTM E336-84 - Measurement of Airborne Sound Insulation in Buildings.
 - 3. ASTM E413-87 - Classification for Determination of Sound Transmission Class (STC).
 - 4. NAAMM-HMMA 840-87 - Installation and Storage of Hollow Metal Doors and Frames.
 - 5. Perform all welding per American Welding Society Specification D1.1.

- C. Erector Qualifications
 - 1. Sound control doors and frames shall be installed by skilled mechanics of a firm approved by the manufacturer and under direct supervision of that manufacturer.
- D. Design Criteria
 - 1. Provide hinged sound control door assemblies, meeting the following design criteria:
 - a. Have Sound Transmission Class (STC) rating as noted on Drawings, when tested in accordance with ASTM Standard E90, as an operable assembly.

1.3 SUBMITTALS

- A. Furnish submittals for items that are identified in this Section by a different typeface and a bracketed code (e.g., *Item [L]*). Refer to Division 1, General Requirements for definition of codes for types of submittals and the administrative requirements governing submittal procedure. Additional submittal requirements pertaining to this Section are specified herein under this Article.
- B. Door Locations and identification: Submit shop drawings, and list the location in building and identification mark for each hollow steel door and frame. Indicate door hardware requirements. Submit manufacturer's printed instructions covering installation of the specified work. Include details of each frame type, sound seals, door bottom, threshold and reinforcements.
- C. Product Data: Submit product data, and identify applicable details of design and construction and STC rating of all hollow steel work.
- D. Product Test Reports: Provide documented test results from a qualified testing agency indicating sound and fire ratings compliance with the specification.
- E. Material Certificates: Certify that all sound control doors comply with the specification requirements. Certification shall be signed by the proposed manufacturer.
- F. Test Reports: Document field test results for compliance with specification performance requirements for all sound control door installations.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver sound-rated doors, frames and fixed windows wrapped, cartoned and crated as required to provide protection during transit and jobsite storage.
- B. Inspect doors upon delivery for damage. Repair and/or replace damaged items as required, at no cost to the Owner.
- C. Store doors on raised platforms in a vertical position. Keep stored material loosely covered and protect from damage. Refer to NAAMM-HMMA 840 "Installation and Storage of Hollow Metal Doors and Frames".

- D. Repair or clean items that have been damaged or soiled that can be restored to an “as new” condition at no cost to the Owner.

1.5 PROJECT SITE CONDITIONS

- A. Examine the door frames, walls, and conditions under which the sound retardant door assemblies are to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Steel Sheet
 - 1. Hot-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A569 and ASTM A568.
 - 2. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A366 and ASTM A568.
 - 3. Galvanized Steel Sheets: Zinc coated carbon steel sheets of commercial quality, complying with ASTM A526, with 1.25 ounce commercial zinc coating, mill phosphatized complying with ASTM A525.
 - 4. Inserts, Bolts and Fasteners: Manufacturer’s standard units for the required application; hot dip galvanize items to be embedded in or in contact with concrete foundation wall or slab-on-grade.
 - 5. Primer: Red oxide/zinc chromate primer for interior; zinc dust/zinc oxide primer for galvanized surfaces.
 - 6. Hinge Finish: Provide cam lift hinges to match finish of Door Hardware specified in Section 08710.
- B. Accessories
 - 1. Provide manufacturer’s standard cam lift hinges, head and jamb seals, thresholds, astragals, door bottoms, and miscellaneous fasteners and accessories, as required, to achieve the STC rating as scheduled and/or shown on the Drawings.
 - 2. Sound Seals: Appropriate type, as standard with the door manufacturer. Seals shall be type required to attain STC ratings shown and shall include a threshold where required.
 - 3. Frame Anchors: Galvanized steel, of type standard with the manufacturer, designed for the specified STC ratings. Anchors shall fit frame profile and be of type to be built into adjoining wall construction.
 - a. At fire-rated openings, anchors shall conform to the requirements of Underwriters Laboratories Inc.

2.2 FABRICATION AND MANUFACTURER

- A. *Sound Control Doors [P,D,T,C]*: Provide sound control metal doors, frames and fixed windows by one of the following acceptable manufacturers.
1. Sound control metal door, frame and fixed window fabricators:
 - a. Krieger Steel Products Co.
 - b. Overly Mfg. Co.
 - c. Industrial Acoustics Co.
- B. Quality of Work
1. Cut and form joints to hairline tolerances. Make all exposed joints smooth and invisible. Grind all exposed welds smooth and flush. Form all arises sharp and true. Miter all face joints.
 2. Fabricate fire-rated sound control doors and frames in accordance with UL Procedures, and affix appropriate UL label to them. Where UL requirements are more stringent than the requirements specified in this Section, the UL requirements shall govern.
 3. Design and fabricate sound control doors, frames and fixed windows to have STC sound ratings as indicated.
- C. Doors
1. *Sound Control Doors [D,P]*: Provide 1³/₄ inch thick (or thicker where required or indicated on the Drawings) flush-design doors fabricated of two outer stretcher-leveled steel sheets not less than 16 gauge; provide cold-rolled sheet for interior doors and galvanized sheet for exterior doors.
 2. Provide sound-insulation filler, solidly packed, full door height, to fill the voids between inner core reinforcing members.
 3. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges.
 4. Reinforce tops, rails, and bottoms of doors with 16 gage horizontal steel channels welded continuously to the outer sheets. For exterior doors, close top and bottom edges to provide weather seal as integral part of door construction or by addition of steel top caps.
 5. Clearances are as follows:
 - a. For single doors:
 - 1) ¹/₈" between door and head of frame.
 - 2) ¹/₁₆" between doors and frame at hinge jamb.
 - 3) ¹/₈" between door and frame at strike jamb.
 6. Glass assemblies:
 - a. Single glazed vision lights with one of the following types of glass:
 - 1) ¹/₄" wire glass for all UL rated doors.or
 - 2) ¹/₄" laminated glass for all non-labeled doors.
 - b. Dual glazed vision lights with one of the following types of glass:
 - 1) One piece of ¹/₄" wire glass and one piece of ³/₈" laminated glass for all UL rated doors.or

- 2) One piece of $\frac{1}{4}$ " laminated glass and one piece of $\frac{3}{8}$ " laminated glass for all non-labeled doors.
7. Reinforce doors for required finish hardware as follows, as minimums:
 - a. Cam-Lift Hinges: as required by the door manufacturer.
 - b. Level-Swing Hinges: 7-gage x $1\frac{1}{4}$ inch wide x 12 inch long bars, secured with not less than four spot welds at each end of the bar.
 - c. Lockset and Bolts: 14-gage steel sheet, secured with not less than two spot welds.
 - d. Surface-Applied Closers: 12-gage steel sheet, secured with not less than six spot welds.
 - e. Push Plates and Bars: 16-gage steel sheet (except when through bolts are indicated or specified), secured with not less than two spot welds.
 - f. Surface Panic Devices: 14-gage sheet steel (except when through bolts are indicated or specified), secured with not less than four spot welds.
 - g. Automatic-Door Bottoms: Reinforce for mortised-type units with minimum 12-gage steel. Provide recess required for units.
8. Provide door manufacturer's acoustically matching astragals at pairs of doors.
9. Provide flat $\frac{1}{4}$ inch high stainless thresholds where necessary to attain STC rating shown.
10. Fabricate and fit sound retardant metal doors accurately in their respective frames to accommodate the required acoustical edge seals and threshold flush with the finish floor.

D. Frames

1. *Sound Control Frames [P,D,T,C]*: Shall be minimum 16 gage formed sheet steel, with reinforcing and anchors. Frames shall be factory template drilled and tapped for hardware and sealing devices. Frames shall be of profiles shown.
2. Sound control frames shall be of the type that conceal anchors in place. Form stops integral with frames.
3. Shop-fabricate sound control frames of minimum 16 gage steel to attain STC sound ratings as shown. Fabricate frames to true rectangular shape, with the vertical plane formed by the door stops and the face of the frame in parallel planes, and with all parts aligned.

E. Fixed Window Frames

1. *Fixed Window Frames [P,D,T,C]*: Provide from not less than minimum 16 gage material, with glass stops. Provide anchors appropriate for the type of wall construction windows are to be installed in.
2. Provide fixed window frames to attain the Sound Transmission Class (STC) shown, in accordance with ASTM E90 and E413.
3. Frames shall be welded units with integral trim, of the sizes and shapes shown. Knocked-down frames are not acceptable.
4. Windows shall be provided with molding and glass as required by the manufacturer for the model and rating specified.
5. When dual glazed systems are provided, each piece of glass shall be capable of being removed independently.
6. Loose stops shall be manufacturer's standard but not less than 20 gage, with mitered or butt corner joints, secured to the frame by cadmium or zinc-coated screws. Snap-on attachments are not permitted.

F. Finishing

1. Clean, degrease and “bonderize” hollow metal surfaces prior to finishing. Prime inaccessible surfaces such as inside surfaces of frames and doors, with rust-inhibitive priming paint, before assembly.
2. Apply one coat of rust-inhibitive primer to exposed surfaces of doors and frames, make surfaces flush and smooth, fill irregularities with one or more coats of mineral filler, and apply another coat of primer. Sand smooth between coats and separately bake-on each coat.

2.3 HARDWARE

- A. Provide all hardware required for sound control doors. Hardware shall be as specified in Section 08710 and shall be provided by this manufacturer and shall meet the STC rating shown on the door schedule for that door.

PART 3 EXECUTION

3.1 INSTALLATION

A. Doors And Frames

1. Install all sound-rated doors, frames, and gasket assemblies in accordance with final approved manufacturer’s instructions and shop drawings. Where frames are anchored with bolts through the face, fill heads with metal putty, grind smooth, and touch-up prime paint.
2. Coordinate setting of frames with wall construction for correct anchor placement.
3. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
4. Grout door and fixed window frames with USG “Structo-Lite”, Gold Bond “Gypsolite” or similar lightweight gypsum plaster grout or with concrete grout, as recommended by the manufacturer to achieve the required STC rating.
5. Hang doors and adjust to freely swinging operation without binding, sticking, sagging, or excessive clearances, and to achieve the STC ratings as scheduled.
6. Install and/or adjust sound seals, door bottoms and accessories in accordance with the manufacturer’s printed instructions. Install thresholds flush with the finish floor.
 - a. Do not mount any hardware on the head or jamb seal covers; the manufacturer is to supply special accessory brackets for mounting those items which would normally be attached to the door frame stops.

B. Adjusting And Cleaning

1. Adjust hardware for smooth and balanced door movement and proper seal. Remove and replace defective work, including doors or frames which are warped, bowed, fail to seal properly, or are otherwise damaged.
2. Sand smooth any rusted or damaged areas of prime coat, and apply touch-up using compatible air-drying primer.

3.2 FIELD QUALITY CONTROL

- A. After doors are installed, test-demonstrate in the presence of the Owner's Representative that the doors operate properly under all conditions. Adjust doors and door hardware if tests show improper functioning.

END OF SECTION

Revision History	
Date	Rev. No.
A	0
B	0
C	0
D	0
E	0
F	0
02-19-09	0

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